



**June 21, 2004
(Updated July 2006)**

**CONDITIONAL SHORT-TERM USE DESIGNATION FOR BASIC (TSS) TREATMENT
For
CDS Media Filtration System**

Ecology Decision:

Based on CDS Technologies' application submission and recommendations by the Technical Review Committee (TRC), Ecology is hereby issuing a Conditional Short-Term Use Designation (CUD) for the CDS Media Filtration System (MFS):

- **As a basic treatment technology,**
- **Using perlite as a filter media as specified by CDS,**
- **Sized at an operating rate of no more than 0.41 GPM per inch of cartridge height, for an 18-inch diameter cartridge. This equates to 9 GPM for a typical 22" tall cartridge. (Except as stated in Condition #1 below).**

This designation is based on limited monitoring of and reporting on all facilities as specified in Condition #2 below.

This designation expires on October 1, 2006 unless extended by Ecology, and is subject to the conditions specified below.

Ecology's Conditions of Use:

CDS MFS shall be designed, installed, and maintained to comply with these conditions:

1. **CDS MFS systems containing perlite are approved for basic treatment at 9 GPM per cartridge (for a typical 22" tall cartridge) at the 15-minute water quality design flowrate (as specified in the most recent Stormwater Management Manual for Western Washington) as calculated using the latest version of the Western Washington Hydrology Model or other Ecology-approved continuous runoff model (e.g., MGS Flood). Note that if single event runoff methods are used to estimate runoff flowrates, Figure 9.6a and Figure 9.6b in Volume V of the 2005 Stormwater Management Manual for Western Washington should be used to adjust the approved hydraulic loading rate of 9 GPM per cartridge. This is done by multiplying the above hydraulic loading rate by the ratio indicated in Figure 9.6 a**

for on-line designs, or by the ratio indicated in Figure 9.6b for off-line designs. The 6-month, 24-hour rainfall amount for the project site must be known to identify the appropriate ratio. The adjusted hydraulic loading rate is divided into the peak 10-minute flow rate predicted by the single event runoff method to compute the number of cartridges necessary.

2. Submit by August 31, 2004 an updated QAPP for achieving a General Use Level Designation as a basic treatment technology that addresses the following:

- Comprehensive monitoring consistent with the TAPE at one or more field test sites in Washington, additional laboratory studies, and proper TSS sampling and analysis.
- Any testing planned for also assessing the MFS as an enhanced treatment technology.
- All “Conditions of Use” and “Other Related Issues” listed in this CUD.
- Cartridge media specifications (for perlite and any other media to be tested).
- Submission of an interim report to Ecology by February 28, 2005 that includes a list of CDS MFS facility locations and sizes (number of cartridges/flow rate) and a discussion of operational and maintenance (O & M) experience and problems, significant equipment/piping upgrades, as well as causes of any bypasses, for all installed CDS MFS facilities.
- Submission of a formal “mid-term” report to Ecology on or before August 31, 2005 that includes: an update of the list of installed facilities in WA, assessment of the performance testing results and O & M experience, a list of equipment and piping upgrades needed at all facilities, and a discussion of adjustments to the design rate or any other factor.
- CDS Technologies, Inc. shall complete all required testing and submit a TEER in support of a General Use Level Designation to the TRC and Ecology by May 31, 2006.
- All interim and final reports required by this CUD shall be submitted to Mieke Hoppin of Ecology and Dave Tucker of the TRC.

3. The CDS MFS must be designed, assembled, installed, operated, and maintained in accordance with CDS Technologies, Inc.’s applicable manuals and documents and this Ecology Decision.

4. CDS agrees to warranty all MFS installations against defects for 12 months from the startup of every facility. CDS also agrees during this CUD testing period, that upon discovery and implementation of product or system improvements, each

previously installed system in Washington State will be upgraded to include these advances at no additional cost to the purchaser.

5. CDS Technologies, Inc. may request Ecology to grant deadline or expiration date extensions, upon showing cause for such extensions.
6. Discharges from the CDS MFS shall not cause or contribute to water quality standards violations in receiving waters.

Applicant: CDS Technologies, Inc.

Applicant's Address: PO Box 11305
755 NE Columbia Blvd.
Portland, OR 97211
Attn: Ms. Diane Warner, Regional Manager, P.E.

Application Documents:

Application for Short-Term Use Designation—Media Filtration System (April 2004), in six sections: Executive Summary, Application (including Quality Assurance Project Plan for attaining General Use Designation), Laboratory Testing, Field Installation and Testing, Plan and Profile Drawings, and System Benefits and Advances.

Applicant's Use Level Request:

Conditional Short-Term Use Designation for Basic Treatment in accordance with Ecology's 2001 Stormwater Management Manual for western Washington.

Applicant's Performance Claims:

Using an 18-inch diameter, 22-inch tall cartridge charged with perlite, the results of 24 full-scale laboratory tests performed between May 2003 and March 2004 with Sil-Co-Sil 106 silica confirm the ability of the cartridge to achieve the 80% total suspended solids (TSS) removal standard at a design flow rate of 12 gallons per minute (GPM) per cartridge.

Six field tests performed in January 2004 demonstrated a TSS removal range from 55 to 77%. However, TSS particle sizes were small (25 to 74 microns) compared with typical stormwater and the laboratory-tested Sil-Co-Sil 106. The applicant believes that the 80% TSS removal goal can be attained for typical stormwater particle sizes, for cartridges sized at 12 GPM (or 0.55 GPM per inch of cartridge height).

Technical Review Committee's Recommendations:

The Technical Review Committee (TRC) finds:

1. Sufficient evidence that CDS Technologies, Inc. should be able to demonstrate, through additional field and laboratory testing, that the CDS MFS can attain Ecology's Basic Treatment goal.
2. A Short-Term Conditional Use Designation (CUD) is appropriate because:
 - The CUD's "technologies in general use in Washington State" criterion is satisfied for the treatment category "vertical cartridge filter technologies", and
 - The MFS's design, operational and maintenance characteristics appear to be functionally equivalent to a vertical cartridge filtration technology previously certified by Ecology and the TRC.
3. Based on test data and monitoring programs currently in progress, Ecology should specify a conservative operating rate of 9 GPM per 22" tall cartridge or an equivalent hydraulic loading rate of 0.41 GPM per 1" height of cartridge for non-standard height cartridge designs. Based on laboratory information, this hydraulic loading rate should achieve 80% or greater removal of Sil-Co-Sil 106 sediment. Results of future field performance evaluations may provide a basis for increasing or decreasing this design hydraulic loading rate to ensure the achievement of TSS removal goals.

Findings of Facts:

1. In 2003 and early 2004, CDS tested a single CDS MFS filter cartridge, 18-inch diameter and 22 inches tall and charged with perlite, using Sil-Co-Sil 106 and a concrete products site sediment. Twenty-four tests were completed at flow rates ranging from about 7 to 18 GPM. Many of the tests were performed on new, rather than "aged" perlite media. TSS removal rates were around 85% for flow rates 10 GPM or below, and between 72% and 81% for flow rates at or above 15-gpm.
2. In January 2004, CDS initiated testing on a CDS Model 612 MFS at a concrete products site in Portland, Oregon. This system is located in a 6-foot by 12-foot vault with 18 (22-inch tall by 18-inch diameter) perlite-charged cartridges. It is designed to treat 270 GPM, at 15 GPM per cartridge (0.68 GPM per inch of cartridge height). The system has been fully instrumented and is being monitored pursuant to a Quality Assurance Project Plan (QAPP).
3. January 2004 testing results (6 rain events) from the Portland site found 55 to 77% TSS removal rates. Particle sizes in the effluent averaged less than 20 microns, with 80% smaller than about 30 microns. These particles are smaller than those found in typical stormwater and are similar to the Sil-Co-Sil 106 laboratory TSS simulant.

4. CDS submitted information on their monitoring procedures, which appear to be consistent with the TAPE, to be used in obtaining additional field and laboratory results supporting General Use Level Designations.
5. CDS outlined various MFS benefits and advances compared to other media filtration systems. This information shows the MFS to be well-designed, incorporating attributes that should ensure satisfactory long-term performance.
6. CDS demonstrated that the MFS should be comparable in performance, operation and maintenance to another Conditional Use-Designated vertical cartridge media filtration system.

Other related issues to be addressed by the Company:

1. The MFS has merit and should be further investigated for its effectiveness in treating phosphorus and metals. This would entail testing using media other than perlite. CDS shall include any monitoring results related to phosphorus or enhanced treatment in the TEER.
2. Vaults shall be marked so that it is obvious (during inspections) that a bypass has occurred and cartridges may need to be replaced.
3. The MFS has been designed using the basic principles of water filtration and expected solids loading rates. On this basis, the maintenance cycle is estimated to be one year for the filter cartridges and two to three years for the solids storage area. Given the partial field data available at this time, the exact maintenance cycle and longevity of the filters is yet to be determined. The determination of annual or periodic maintenance needs for different categories of land use activities will be an explicit goal of the field monitoring program. TRC concerns regarding potential sediment or organic film plugging of cartridges that may degrade the direct filtration process will also be addressed in the field evaluations and the mitigating maintenance procedures reported in all interim and final reports.
4. The TRC expressed concerns about potential vault cleaning problems related to, and leakage or failure of, the numerous flexible connector pipes. All interim and final reports shall address these and other maintainability issues.

Technology Description

<http://www.cdstech.com.au/us/index.htm>

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